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# REQUEST FOR ACCESS OF ABANDONED APPLICATION UNDER 37 CFR 1.14(a)

In re Application of Application Number RECEIVED 08-33*20*46 JAN 1 4 2003 Group Art Unit . File Information Unit Paper No. **Assistant Commissioner for Patents** Washington, DC 20231 I hereby request access under 37 CFR 1.14(a)(3)(iv) to the application file record of the aboveidentified ABANDONED application, which is: (CHECK CNE)  $\sqrt{\text{(A)}}$  referred to in United States Patent Number 6248(B) referred to in an application that is open to public inspection as set forth in 37 CFR 1.11, i.e., filec \_\_\_\_\_\_, on page \_\_\_\_\_, of Application No. \_\_\_\_ paper number \_\_\_ \_ (C) an application that claims the canefit of the filing usta of an application that is open to public inspection, i.e., Application No. \_ (D) an application in which the applicant has filed an authorization to lay open the complete application to the public. Please direct any correspondence concerning this request to the following address: FOR PTO USE ON Typed or printed name Approved by: (initials)

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US006248516B1

# (12) United States Patent Winter et al.

(10) **Patent No.:** 

US 6,248,516 B1

(45) Date of Patent:

Jun. 19, 2001

| (54) | SINGLE DOMAIN LIGANDS, RECEPTORS |
|------|----------------------------------|
|      | COMPRISING SAID LIGANDS METHODS  |
|      | FOR THEIR PRODUCTION, AND USE OF |
|      | SAID LIGANDS AND RECEPTORS       |

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Ward, both of Cambridge; Detlef Güssow, Abington, all of (GB)

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(GB)

(\*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

(21) Appl. No.: 08/470,031

(22) Filed: Jun. 6, 1995

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### (30) Foreign Application Priority Data

| Mar. | 16, 1989   | (GB)   |   |        |                 |   | <b></b> |       | 8    | 3906  | 034  |
|------|------------|--------|---|--------|-----------------|---|---------|-------|------|-------|------|
| Apr. | 22, 1989   |        |   |        |                 |   |         |       |      |       |      |
| May  | 15, 1989   | (GB)   |   |        |                 | •••••                                   | •••••   |       | 8    | 3911  | 047  |
| Jun  | ı. 2, 1989 | (GB)   |   |        | •••••           | •••••                                   | •••••   |       | 8    | 3912  | 652  |
| Jun. | 16, 1989   | (GB)   |   |        | •••••           | •••••                                   | •••••   |       | 8    | 3913  | 900  |
| Aug. | 15, 1989   | (GB)   |   |        | •••••           |   |         |       | 8    | 3918  | 543  |
| Nov. | 13, 1989   | (WO)   | • | •••••  | •••••           | •••••                                   | P       | CT/G  | B8   | 9/01: | 344  |
| (51) | Int. Cl.7  |        |   |        | •••••           | • | •••••   | C     | :12  | Q 1,  | /68  |
| (52) | U.S. Cl.   |        |   |        |                 |   |         |       |      |       |      |
| ` ′  |            |        |   |        | ·               |   |         | 5/441 |      |       |      |
| (58) | Field of   | Search | ١                                       |        | • • • • • • • • |   | . 43    | 5/240 | ).2, | 252   | 2.3, |
|      |            | 435/   | 252                                     | .33, ( | 6, 69           | 9.6, 4                                  | 141,    | 446;  | 53   | 6/23  | 3.7, |

#### (56) References Cited

### U.S. PATENT DOCUMENTS

23.4, 23.5, 23.6

| 4,356,270 | 10/1982   | Itakura .  |
|-----------|---|--|
| 4,642,334 | 2/1987  | Moore et al  |
| 4,656,134 | 4/1987  | Ringold .  |
| 4,683,195 | 7/1987  | Mullis et al   |
| 4,683,202 | 7/1987  | Mullis .   |
| 4,704,692 | 11/1987   | Ladner.  |
| 4,711,845 | 12/1987   | Gelfand et al  |
| 4,714,681 | 12/1987   | Reading .  |
| 4,800,159 | 1/1989  | Mullis et al   |
| 4,806,471 | 2/1989  | Molin et al  |
| 4,816,397 | 3/1989  | Boss et al   |
| 4,889,818 | 12/1989   | Gelfand et al  |
| 4,937,193 | 6/1990  | Hinchliffe et al.  |
| 4,946,786 | 8/1990  | Tabor et al  |
| 4,959,317 | 9/1990  | Sauer .  |
|           | 4,642,334<br>4,656,134<br>4,683,195<br>4,683,202<br>4,704,692<br>4,711,845<br>4,714,681<br>4,800,159<br>4,806,471<br>4,816,397<br>4,889,818<br>4,937,193<br>4,946,786 | 4,642,334 2/1987<br>4,656,134 4/1987<br>4,683,195 7/1987<br>4,683,202 7/1987<br>4,704,692 11/1987<br>4,711,845 12/1987<br>4,714,681 12/1987<br>4,800,159 1/1989<br>4,806,471 2/1989<br>4,816,397 3/1989<br>4,889,818 12/1989<br>4,937,193 6/1990<br>4,946,786 8/1990 |

| 4,965,188 | 10/1990 | Mullis et al  |
|-----------|---------|---------------|
| 4,978,743 | 12/1990 | Selbeck et al |
| 4,983,728 | 1/1991  | Herzog et al  |
| 5.023,171 | 6/1991  | Ho et al      |

(List continued on next page.)

#### FOREIGN PATENT DOCUMENTS

| 2016841      |   | 11/1990 | (CA).  |
|--------------|---|---------|--------|
| 2019323      |   | 12/1990 | (CA).  |
| 0 120 694    |   | 10/1984 | (EP).  |
| 0 125 023    |   | 11/1984 | (EP) . |
| 0 171 496    |   | 2/1986  | ÈΡ).   |
| 0 173 494    |   | 3/1986  | (EP) . |
| 0 194 276 B1 |   | 9/1986  | (EP).  |
| 0 200 362    |   | 12/1986 | (EP).  |
| 0 201 184 B1 |   | 12/1986 | (EP).  |
| 0 239 400    |   | 9/1987  | (EP).  |
| 0 368 684    |   | 5/1990  | ČΕΡ).  |
| 2 137 631    |   | 10/1984 | (GB).  |
| 61-104788    |   | 5/1986  | (JP) . |
| 63-152984    |   | 6/1988  | (JP)   |
| WO 86/01533  |   | 3/1986  | (WO).  |
| WO 87/02671  | • | 5/1987  | (wo).  |
| WO-A         |   |         | ` '    |
| 88/01649     |   | 3/1988  | (WO).  |
| WO 88/ 0663  |   | 9/1988  | (wo).  |
| WO 88/06630  |   | 9/1988  | (wo).  |
| WO 88/09344  |   | 12/1988 | (wo).  |
| WO 89/00999  |   | 2/1989  | (WO).  |
| WO 90/14424  |   | 11/1990 | (wo).  |
| WO 90/14430  |   | 11/1990 | (WO).  |
| WO 90/14443  |   | 11/1990 | (wo).  |
| WO-A         |   |         |        |
| 97/08320     |   | 3/1997  | (WO).  |
|              |   |         |        |

#### OTHER PUBLICATIONS

Kokubu, F., et al, *The EMBO Journal*, vol. 7, No. 7, pp. 1979–1988, 1988 "Complete structure and organization of immunoglobulin heavy chain constant region genes in a phylogenetically primitive vertebrate".

Schwager, J., et al, *Proc. Natl. Acad. Sci. USA*, vol. 85, pp. 2245–2249, Apr. 1988 Immunology "Amino acid sequence of heavy chain from *Xenopus laevis* IgM deduced from cDNA sequence: Implications for evolution of immunoglobulin domains".

Roth, M.E., et al, *Science*, vol. 241, pp. 1354–1358, Sep. 9, 1988 "Selection of Variable–Joining Region Combinations in the  $\alpha$  Chain of the T Cell Receptor".

(List continued on next page.)

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# (57) ABSTRACT

The present invention relates to single domain ligands derived from molecules in the immunoglobulin (Ig) superfamily, receptors comprising at least one such ligand, methods for cloning, amplifying and expressing DNA sequences encoding such ligands, preferably using the polymerase chain reaction, methods for the use of said DNA sequences in the production of Ig-type molecules and said ligands or receptors, and the use of said ligands or receptors in therapy, diagnosis and catalysis.

#### 21 Claims, 23 Drawing Sheets